

## REMARKS

Claims 5 and 7-10 are pending in this Application. Applicant has amended various claims to define the claimed invention more particularly, and to define a new patentable claim, and to raise a new issue for the Examiner's consideration, thereby precluding a First Action Final Rejection. Applicant has cancelled claim 6 without prejudice or disclaimer. No new matter is added.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claim 8 stands rejected under 35 U.S.C. § 112, second paragraph.

Claims 5, 7, and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable by Ishida (US 2002/0073741) in view of Nunome et al. (US 2003/0110811, and hereinafter "Nunome"), and further in view of European Patent No. 1104891 ("Chang"). Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida, Nunome, and Chang, in view of Japanese Abstract No. 2000-086265 ("Kudo"). Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Ishida, Nunome, and Chang, in view of Hirano et al. (US 2003/0145630, and hereinafter "Hirano"). Claim 10 stands rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Ishida.

Applicant respectfully traverses these rejections in the following discussion.

### I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by exemplary claim 7) is directed to a method of manufacturing glass base material.

The method includes forming porous glass base material which includes a dopant added core part, and an inner clad layer surrounding the core part and having a lower refractive index than the core part, transforming the porous glass base material into clear

glass to be provided as a core ingot, heating and elongating the core ingot in an axial direction in an electric furnace to make a core rod, and forming an outer clad layer surrounding the core rod by welding a glass tube on an outer surface of the core rod elongated in the electric furnace.

The transformed core ingot has an outer diameter of 70 mm or more, a ratio of an outer diameter of the core part  $d$  to an outer diameter of the inner clad layer  $D$ , or  $d/D$ , is smaller than 0.21.

A heat insulator used for the electric furnace, used in the heating and elongating the core ingot, includes carbon material containing more than 100 ppm and less than 810 ppm ash.

Claim 8 recites a method of manufacturing a glass base material that includes forming a porous glass base material which includes a dopant added core part, and an inner clad layer surrounding the core part and having a lower refractive index than the core part, transforming the porous glass base material into a clear glass to be provided as a core ingot, and heating and elongating the core ingot in an axial direction in an electric furnace to make a core rod.

A heat insulator used for the electric furnace, used in the heating and elongating the core ingot, comprises carbon material containing more than 100 ppm and less than 810 ppm ash. Glass fine particles are deposited on the outer surface of the core rod, which is elongated in the electric furnace, to form a porous glass body, before the porous glass body is transformed into clear glass.

The claimed method makes it possible for the transmission loss in the wavelength of around 1385 nm to be significantly decreased (e.g., see Embodiments 2 and 3 and Table 1 on pages 6-8 of the Application).

## **II. THE 35 U.S.C. 112, SECOND PARAGRAPH REJECTION**

In rejecting claim 8, the Examiner alleges that the claim is indefinite for failing to particularly point out the invention.

Although Applicant respectfully disagrees with the Examiner, in an effort to expedite prosecution, Applicant has written claim 8 independent of claim 7.

Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection.

### III. THE PRIOR ART REJECTIONS

Claims 5, 7, and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable by Ishida in view of Nunome, and further in view of Chang. Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida, Nunome, and Chang, in view of Kudo. Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Ishida, Nunome, and Chang, in view of Hirano. Claim 10 stands rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Ishida.

Applicant respectfully submits that the references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

Applicant notes that claim 6 has been cancelled by this Amendment, rendering the rejection of this claim moot. The remaining rejections, to the extent the Examiner considers them still applicable to claims 5 and 7-10, as amended, are respectfully traversed as explained below.

Applicant respectfully submits that these references are unrelated and would not have been combined as alleged by the Examiner. Thus, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Moreover, Applicant submits that there is no motivation or suggestion in the references (and thus no predictability for one of ordinary skill in the art) to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have combined the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Furthermore, Applicant submits that the alleged references either alone or in combination (*arguendo*) fail to teach or suggest, “*wherein a heat insulator used for the electric furnace, used in the heating and elongating said core ingot, comprises carbon material containing more than 100 ppm and less than 810 ppm ash,*” as recited in claims 7 and 8.

Indeed, the Examiner does not even allege that the cited references teach or suggest this feature of the claimed invention.

The respective combinations of features in claims 7 and 8, including the above quoted features, makes it possible for the transmission loss in the wavelength of around 1385 nm to be significantly decreased (e.g., see Embodiments 2 and 3 and Table 1 on pp. 6-8 of the Application).

That is, claims 7 and 8 recite that the heat insulator used for the electric furnace, used in the heating and elongating the core ingot, includes carbon material containing more than 100 ppm and less than 810 ppm ash. Accordingly, claims 7 and 8 explicitly exclude an amount of ash equal to or less than 100 ppm. In addition, the step in which the heat insulator is used, is restricted to the heating and elongating the core ingot.

On the other hand, Kudo teaches “equal or less than 100 ppm” as a preferable range for the ash content of carbon. In addition, Kudo merely discloses the amount of ash contained in the heat insulator or heater used in the dehydrating and sintering step. In other words, Kudo is silent about, and fails to teach or suggest the heat insulator used for the electric furnace, is used in the heating and elongating the core ingot, as recited in claims 7 and 8. Thus, Kudo fails to teach or suggest this feature of the claimed invention.

Moreover, Applicant submits that Ishida, Nunome, Chang, and Hirano fail to make up the deficiencies of Kudo.

Indeed, the Examiner does not even allege that Ishida, Nunome, Chang, and Hirano teach or suggest this feature of the claimed invention. The Examiner merely relies on Ishida, Nunome, Chang, and Hirano for allegedly teaching forming porous perform, fabricating a core, an outer clad layer, and an etching of a core rod, respectively.

Since Ishida, Nunome, Chang, and Hirano do not overcome the deficiencies of Kudo, the combination of references fails to render the rejected claims obvious.

Therefore, Applicant respectfully submits that one with ordinary skill in the art would not have combined the alleged references, and even if combined, the alleged combination does not teach or suggest (or render obvious) each and every feature of the claimed invention. Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw the rejections of claims.

#### **IV. FORMAL MATTERS AND CONCLUSION**

In view of the foregoing, Applicant submits that claims 5 and 7-10, all the claims

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presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

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Respectfully Submitted,

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